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of KIGAM and IDC REB Analysis Results for Earthquakes Around the Korean Peninsula

We compared the locations of earthquakes with magnitudes greater than 3.0 that occurred around the Korean Peninsula from January 1, 2010 to April 11, 2024 between the KIGAM (Korea Institute of Geoscience and Mineral Resources) catalog and the CTBTO (Comprehensive Nuclear-Test-Ban Treaty Organization) IDC (International Data Center) REB (Review Event Bulletin) earthquake catalog. We initially selected 425 event pairs by considering the magnitude, location, and epicenter time of each earthquake using the Bulcmp program. We reselected 43 event pairs from the high-confidence region, latitude 32–44 degrees, longitude 122–132 degrees, and analyzed them. The IDC REB epicenters were mostly located to the south of the KIGAM epicenters, and especially in the inland, they showed a southwesterly pattern compared to the KIGAM. RSTT_SSSC (Regional Seismic Travel Time Source Specific Station Correction) was applied to re-location for 34 earthquakes that occurred between January 1, 2010 and August 11, 2020 using Evloc program. As a result of applying RSTT_SSSC, the error ellipse area became smaller than before and 75% of cases were less than 1,000 km². The epicenter location differences also became smaller with moving right and upward. These results show that the accuracy of the epicenter location was improved by applying RSTT_SSSC correction.

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